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Arenariomyces truncatellus sp. nov., an ascomycete on driftwood from the north coast of Zealand, Denmark

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Abstract — Incubated driftwood from the north coast of Zealand, Denmark, yielded a new species, *Arenariomyces truncatellus,* belonging to the *Halosphaeriaceae, Ascomycota*. The species is characterized by globose, spiny ascomata formed on wood with asci deliquescing before spore maturity and 1-septate ascospores with three delicate appendages at each spore end. The species is compared with *A. majusculus, A. parvulus, A. trifurcatus,* and *A. triseptatus*. A key to the species is provided.

Key words — higher marine fungi, *Microascales*, taxonomy

Introduction

Investigations into the incidence and distribution of higher marine fungi colonizing wood along the Danish coasts were initiated by Höhnk (1955) and Kohlmeyer (1968). Since then more data have been accumulated and published in "A check list of higher marine fungi on wood from Danish coasts" (Koch & Petersen 1996) and further in Petersen (1997), Petersen & Koch (1997a,b), and Koch et al. (2007). Also added (Koch unpublished) are *Corollospora angusta* Nakagiri & Tokura, *C. californica* Kohlm. & Volkm.-Kohlm., and *C. pseudopulchella* Nakagiri & Tokura. In this article, a new species of *Arenariomyces* Höhnk (*Halosphaeriaceae*) is described from the north coast of Zealand, Denmark.

Material & methods

Driftwood entrapped among stones and wood from the intertidal zone was collected at Tisvildeleje on the north coast of Zealand, Denmark, in January 2008. Salt content was around 10–20‰. The wood was subsequently incubated at 16–19°C and examined periodically for fruiting bodies. From the first formed *A. truncatellus* ascomata, ascospores were used for inoculation of sterilized pieces of driftwood, on which ascomata developed over a 4–8 month incubation period at 16–19°C ascomata developed.

Arenariomyces truncatellus Jørg. Koch, **sp. nov.** FIGS 1–5

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Differs from *Arenariomyces majusculus* by its smaller ascospores with two cells often conspicuously different in size and with short delicate appendages.

TYPE: Denmark, North Zealand, Tisvildeleje (UTM 691000E 6217000N), from driftwood (*Picea* sp.), Jan. 2008, Jørg. Koch 998, incubated nine months in humid chamber (**Holotype**, CP [piece of conifer wood + slides 1–4]; **isotype**, CP [remainder of collection Jørg. Koch 998]). [The original material also contained *Dictyosporium pelagicum* (Linder) G.C. Hughes ex E.B.G. Jones and *Halosphaeriopsis mediosetigera* (Cribb & W. Cribb) T.W. Johnson.]

ETYMOLOGY: From the Latin *truncatellus* = somewhat truncate, referring to the slightly flattened ends of the ascospores, when appendages are not unfolded.

ASCOMATA on wood (rarely seated with subicula on grains of sand) measured in situ 78–131–156 µm (n = 19) in diam. Globose-subglobose with the basal part immersed in the outermost layer of the substrate and anchored with brown tortuous hyphae, often in tufts. Ascomata gregarious, black, shiny when young, carbonaceous, brittle, covered with scattered brownish black spines, slightly curved, up to 16 µm long and 1.5–2 µm wide, but sometimes with a swollen base 4–8 µm wide and 4 µm high. Immature ascomata from 20 µm in diam. are covered with spines up to 8 µm long. Neither necks nor ostioles were observed. PERIDIUM membranous, single layered, composed of one layer of flat, on the outside domed, thick-walled cells forming a textura angularis with edges 3–4–6 µm, brownish black in transparent light. SUBICULUM composed of hyaline, epidermoid cells merging into the thin-walled pseudoparenchyma, globose or ellipsoidal as free cells (10–20–26 µm in diam.), with scattered cytoplasm and small oil globules filling the centre of young ascomata. In some cells a few cytoplasmic strands stretching towards the cell wall indicate pit connections to neighbouring cells.

ASCI eight-spored, pyriform, 36–56 × 20–32 µm, thin-walled, unitunicate, deliquescing before maturity of the ascospores, developing from the base of the ascocarp. No catenophyses or paraphyses. ASCOSPORES 18–21.4–24 × 8–10.2–12 µm (n = 66) measured in seawater (12%), cylindrical, 1-septate, more or less constricted at the septa, often one cell is shorter and narrower than the other, hyaline, with three subterminal-terminal appendages at each end. APPENDAGES attenuate, straight or curved, delicate, up to 12 µm long, about 1 µm wide at the base, expanded at right angles to the axis, 120° between each appendage. When not unfolded the spore ends seem slightly flattened.

SUBSTRATE: Driftwood (conifer wood) between stones (intertidal zone).

Discussion

Jones et al. (2009) recognized the four species *A. majusculus* Kohlm. & Volkm.-Kohlm., *A. parvulus* Jørg. Koch, *A. trifurcatus* Höhnk, and *A. triseptatus*

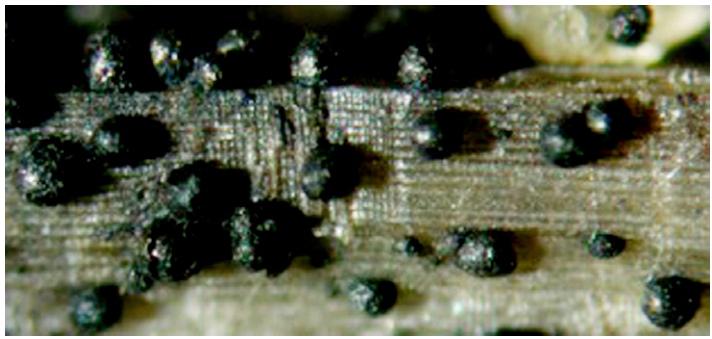
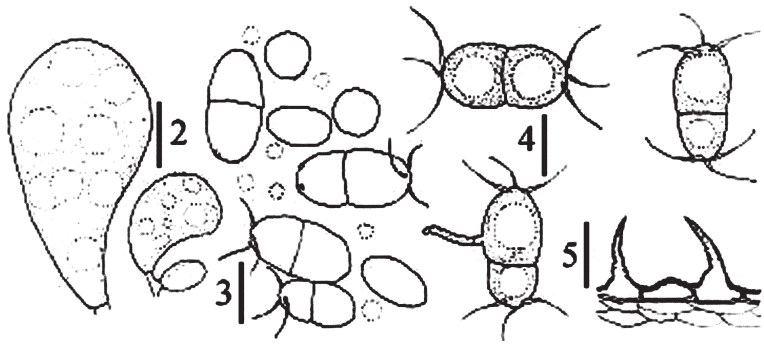


Fig. 1. *Arenariomyces truncatellus*. Group of ascomata formed on sterilized driftwood inoculated with ascospores. Scale bar = 160 µm.



Figs 2–5. *Arenariomyces truncatellus*. 2. Young asci. 3. Different stages of immature ascospores forming an eight-spored cluster indicating an early deliquescing of the ascus wall. 4. Three ascospores, one germinated after 72 hours in sea water (12%). 5. Part of the peridium with spines and underlying epidermoid flattened cells. Scale bars: 2–4 = 10 µm; 5 = 14 µm.

Kohlm. in the genus *Arenariomyces*. The latest, *A. truncatellus*, is different from these with respect to ascospore dimensions, the uneven sized spore cells, and the short and delicate structure of the appendages. *A. truncatellus* and *A. majusculus* ascomata are formed in the outermost part of the wood substrate and bearing spines in contrast to *A. parvulus*, *A. trifurcatus*, and *A. triseptatus*. However, the stability of ascomatal characters in the genus is questioned (on wood / on hard surfaces, spines / no spines). For example, *A. trifurcatus* ascomata are sometimes seen with a few spines and also directly on wood (Koch unpublished). Further observations of the rare *Arenariomyces* species could perhaps reveal a similar variability. But general similarities such as the thin-walled pseudoparenchyma of the young ascomata, unitunicate asci that deliquesce early before ascospore maturation, together with the three polar appendages point to *A. truncatellus*

as morphologically well accommodated as a new species in *Arenariomyces*. It is recognized that examination of *A. truncatellus* in the electron microscope, especially in regard to appendage development, and at the molecular level is needed to establish its relationship to *A. trifurcatus*, the type species.

Key to *Arenariomyces* species

1a. Ascomata mainly on wood **2**
1b. Ascomata mainly on hard surfaces. **3**
2a. Ascospores 33 × 11.5 µm (av.). ..... ***A. majusculus***
2b. Ascospores 21.4 × 10.2 µm (av.) ..... ***A. truncatellus***
3a. Ascospores 3-septate. ..... ***A. triseptatus***
3b. Ascospores 1-septate **4**
4a. Ascospores 16–25 × 3–6 µm ..... ***A. parvulus***
4b. Ascospores 28–32 × 9–11 µm ..... ***A. trifurcatus***

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Literature cited

Höhnk W. 1955. Studien zür Brack- und Seewassermykologie V. Höhere Pilze des submersen Holzes. Veröffentlichungen des Instituts für Meeresforschung in Bremerhaven 3: 199–227.

Jones EBG, Sakayaroj J, Suetrong S, Somrithipol S, Pang KL. 2009. Classification of marine *Ascomycota,* anamorphic taxa and *Basidiomycota.* Fungal Diversity 35: 1–203.

Koch J, Petersen KLR. 1996. A checklist of higher marine fungi on wood from Danish coasts. Mycotaxon 60: 397–414.

Koch J, Pang KL, Jones EBG. 2007. *Rostrupiella danica* gen. et sp. nov. a *Lulworthia*-like marine lignicolous species from Denmark and the USA. Botanica Marina 50: 294–301. http://dx.doi.org/10.1515/BOT.2007.034

Kohlmeyer J. 1968. Dänische Meerespilze (*Ascomycetes*). Berichten der Deutschen Botanische Gesellschaft 81: 53–61.

Petersen KLR. 1997. Ultrastructural studies of the marine ascomycete *Groenhiella bivestia*. Botanica Marina 40: 71–75. http://dx.doi.org/10.1515/botm.1997.40.1-6.71

Petersen KLR, Koch J. 1997a. Substrate preference and vertical zonation of lignicolous marine fungi on mooring posts of oak (*Quercus* sp.) and larch (*Larix* sp.) in Svanemøllen harbour, Denmark. Botanica Marina 40: 451–463. http://dx.doi.org/10.1515/botm.1997.40.1-6.451

Petersen KLR, Koch J. 1997b. *Buxetroldia bisaccata* gen. et sp. nov., a marine lignicolous halosphaeriacean fungus from coastal waters, Denmark. Mycological Research 101: 1524–1528. http://dx.doi.org/10.1017/S0953756297004383